Functions Past Paper Questions GCSE Edexcel - Calculator

1.

$f(x) = 4\sin x°$

(a) Find f(23)

Give your answer correct to 3 significant figures.

....
(1)

$g(x) = 2x - 3$

(b) Find fg(34)

Give your answer correct to 3 significant figures.

....
(2)

$h(x) = (x + 4)^2$

Ivan needs to solve the following equation $h(x) = 25$

He writes

$(x + 4)^2 = 25$
$x + 4 = 5$
$x = 1$

This is not fully correct.

(c) Explain why.

....

2.

f and g are functions such that

$$f(x) = \frac{2}{x^2} \quad \text{and} \quad g(x) = 4x^3$$

(a) Find f(–5)

....
(1)

(b) Find fg(1)

....
(2)

(Total for Question 11 is 3 marks)

3.

The functions f and g are such that

$$f(x) = 5x + 3 \qquad g(x) = ax + b \qquad \text{where } a \text{ and } b \text{ are constants.}$$

$g(3) = 20$ and $f^{-1}(33) = g(1)$

Find the value of a and the value of b.

$a = $ ....

$b = $ ....

4.

The functions f and g are such that

$$f(x) = 3(x - 4) \text{ and } g(x) = \frac{x}{5} + 1$$

(a) Find the value of $f(10)$

....

(1)

(b) Find $g^{-1}(x)$

$g^{-1}(x) =$ ....

(2)

(c) Show that $ff(x) = 9x - 48$

(2)

5.

$f(x) = 3x^2 - 2x - 8$

Express $f(x + 2)$ in the form $ax^2 + bx$

....

6.

The function f is such that

$$f(x) = 4x - 1$$

(a) Find $f^{-1}(x)$

$f^{-1}(x) = $ ....

(2)

The function g is such that

$$g(x) = kx^2 \text{ where } k \text{ is a constant.}$$

Given that $fg(2) = 12$

(b) work out the value of k

$k = $ ....

(2)

7.

g is the function with domain $x \geqslant -3$ such that $g(x) = x^2 + 6x$

(a) Write down the range of g^{-1}

(1)

(b) Express the inverse function g^{-1} in the form $g^{-1} : x \mapsto \ldots$

8.

f is the function such that $f(x) = 4 - 3x$

(a) Work out $f(5)$

(1)

g is the function such that $g(x) = \dfrac{1}{1 - 2x}$

(b) Find the value of x that cannot be included in any domain of g

(1)

(c) Work out $fg(-1.5)$

9.

The function f is defined as $f(x) = \dfrac{\sqrt{x^2 + k^2}}{x}$ for $x > 0$ and where k is a positive number.

(a) Find the value of p for which $f^{-1}(p) = k$

$p =$

(3)

The function g is defined as $g(x) = x^2$ for $x > 0$

(b) Given that $gf(a) = k$ for $k > 1$
    find an expression for a in terms of k.

10.

The function f is such that

$$f(x) = \frac{3x - 5}{4}$$

(a) Find f(–7)

....

(1)

(b) Express the inverse function f⁻¹ in the form f⁻¹(x) = ...

$f^{-1}(x) =$ ....

(2)

The function g is such that

$$g(x) = \sqrt{19 - x}$$

(c) Find fg(3)